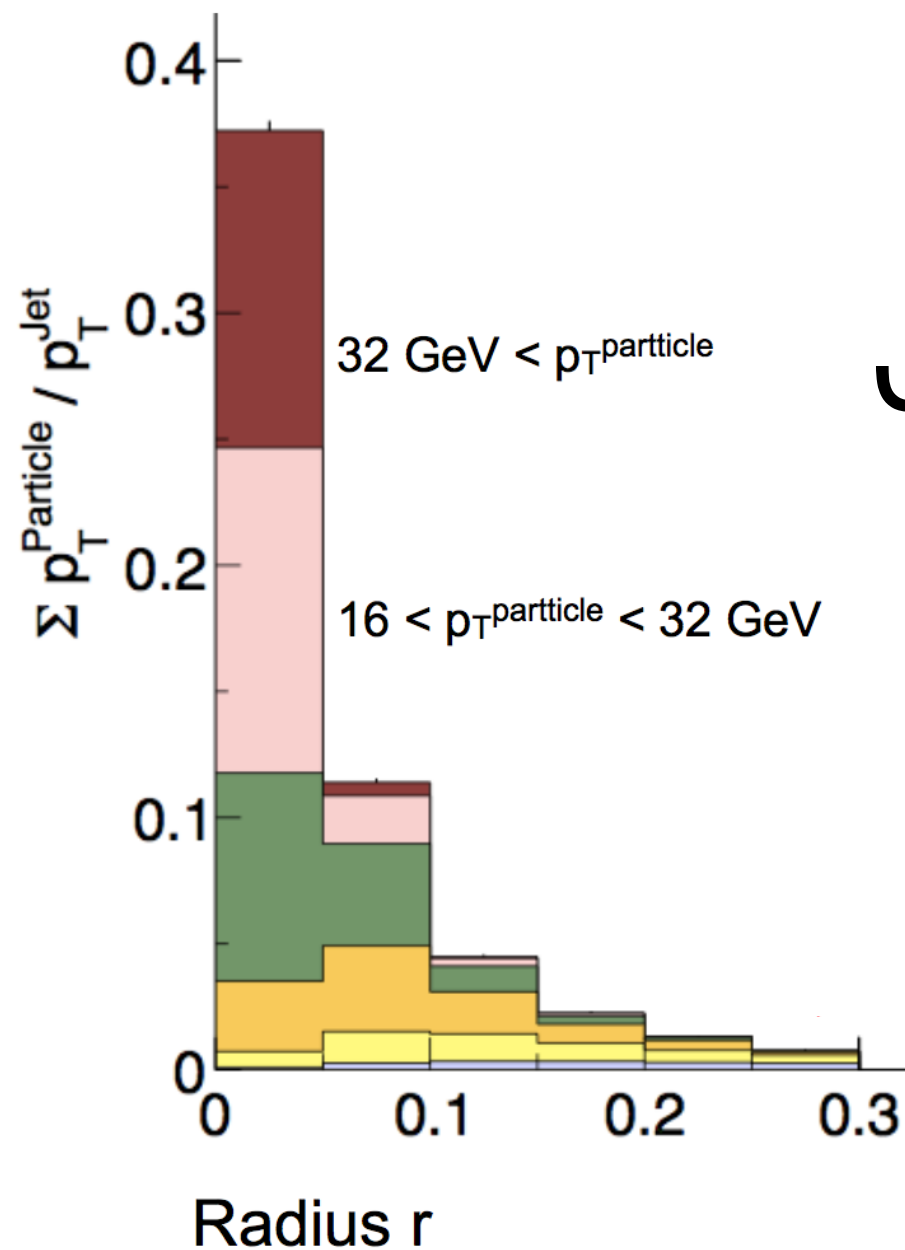


# Jet structure topical group: *status,* *plans and needs*



Dennis V. Perepelitsa (BNL), Rosi Reed (Lehigh)

22 April 2016  
sPHENIX General Meeting



# Status & Plans

- First meeting, last Friday, about 20 participants
  - ➔ discussed physics scope of topical group, organization of group, available volunteers
- Short-term goal: respond to Berndt's charge with plots which illustrate how detector configurations affect performance/observables
  - ➔ plan on small number of crisp, well-vetted plots rather than an encyclopedia
  - ➔ plan to coordinate “official” MC production (i.e. dijet, photon-jet events) that all studies must use
- Second meeting (will be announced on mailing list):  
Friday, April 29th, 1:30pm EDT



## *Partial list of detector configuration changes*

- Inner tracking (VTX, ITS)
- Outer tracking (TPC, strips, ITS)
- Calorimeter acceptance
- Presence of inner HCal
- HCal # scintillators / tower
- B field (1.4 T vs. 1.5T?)

## *Jet and jet structure-measuring capability*

### Jet energy measurement

⇒ spectra, asymmetries, FF's

### Charged particle efficiency & fake rate

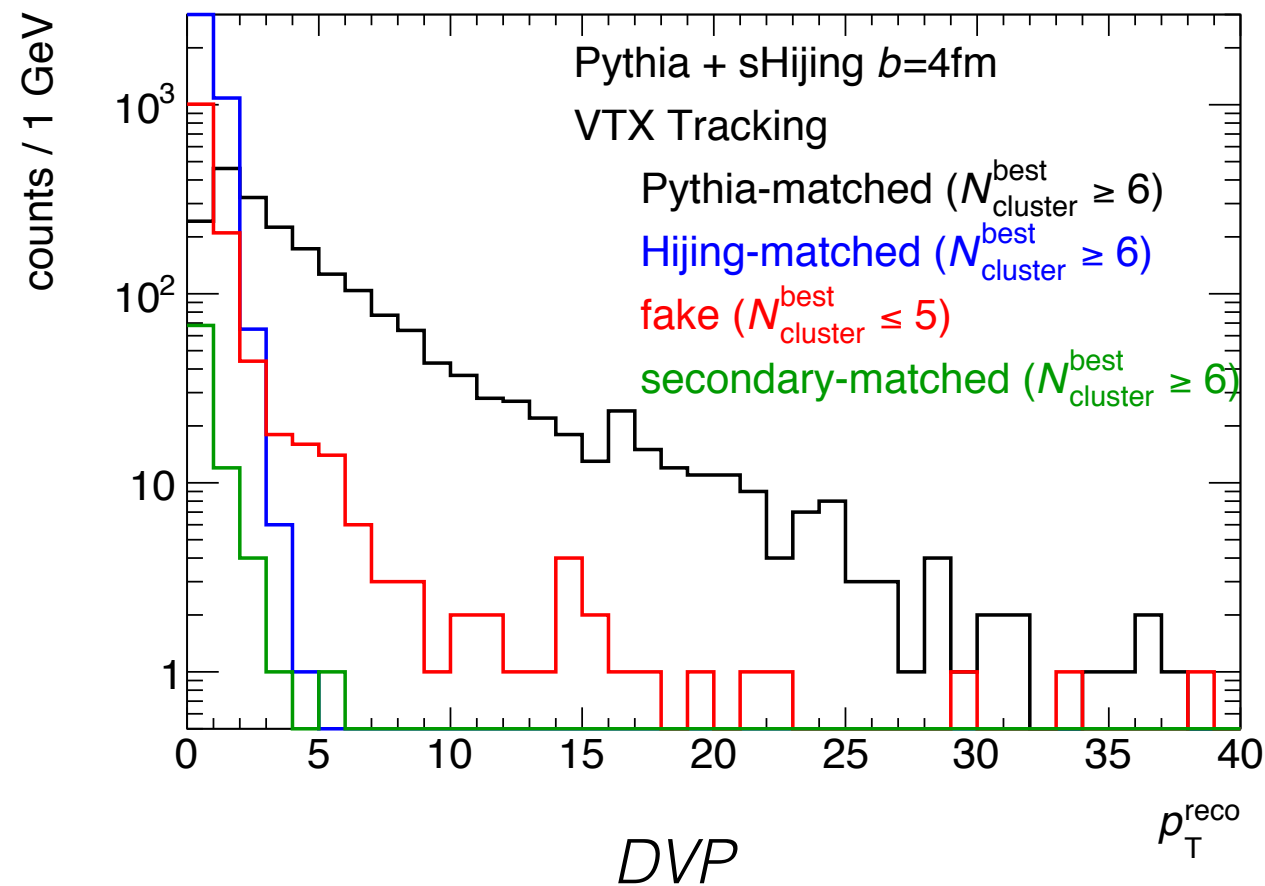
⇒ FF's, missing- $p_T$  flow

### Photon identification

⇒ photon-jet physics

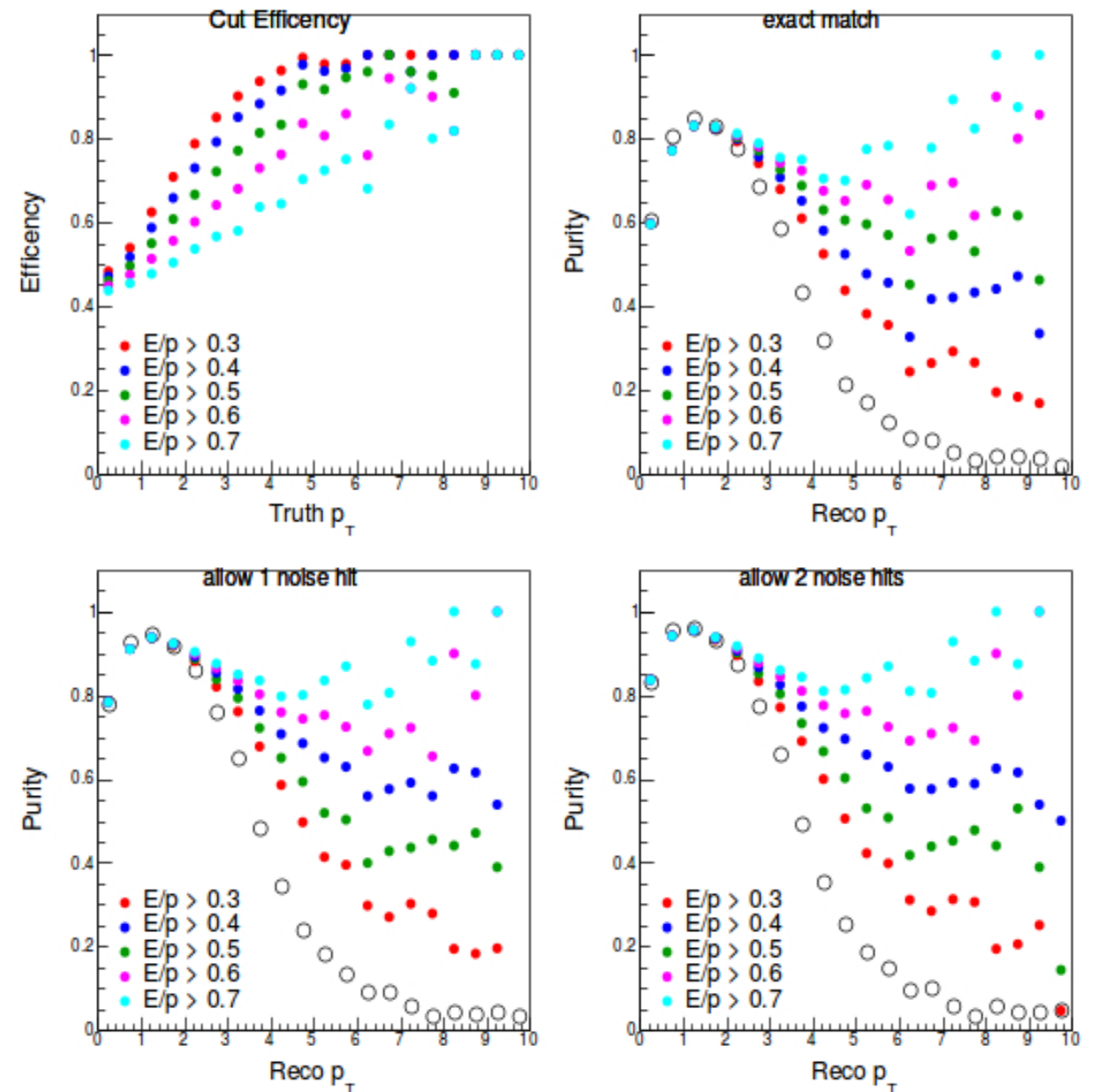


# Example issue: fake rate



12 April 2016 sPHENIX Sims

- Reco track  $p_T$  spectra inside 40 GeV jets balancing photons
  - does narrowing to jet cone reduce relative **fake rate** enough?



K. Hill, R. Belmont

22 March 2016 sPHENIX Sims

- Track purity (truth-matched / all) in Hijing events
  - different definitions of “truth-matched”
  - can E/p matching help?



# Proposed Timescale

|       |    |    |    |    |    |    |    |
|-------|----|----|----|----|----|----|----|
|       | Su | M  | Tu | W  | Th | F  | Sa |
| April | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| May   | 1  | 2  | 3  | 4  | 5  | 6  | 7  |
|       | 8  | 9  | 10 | 11 | 12 | 13 | 14 |
|       | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|       | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|       | 29 | 30 | 31 |    |    |    |    |

- Only five weeks and change until 31 May deadline
- Possible **Jet Structure meeting** dates
- Strawman date for **defined geometries + MC generation**
- Proposed plots shown at **sPHENIX Collaboration Meeting**
- **Finalize and document** results (led by SP)
- Deadline for **Berndt's charge**



# Needs

- Personpower
  - ➔ all are welcome, no prior knowledge/experience is required
  - ➔ sign up for mailing list by emailing [sphenix-jet-structure-l-request@lists.bnl.gov](mailto:sphenix-jet-structure-l-request@lists.bnl.gov) with “subscribe” in the subject line
- Defined \$75m sPHENIX configurations
  - ➔ waiting for direction from detector groups + EC
  - ➔ in the meantime, can develop private studies with MIE or *ad hoc* configurations
- Coordinated MC samples for Jet Structure studies
  - ➔ discussing statistics, type of simulation (full, tracking only, fast) and physics samples (dijets, photon-jets) with group
  - ➔ some overlap with HF Jet TG, probably not with Upsilon TG
- Clarification on deliverable to Berndt (scope, level of detail, etc.)